CONVERTEON™ Family
AT-CV10x Series Media Converter Line Cards
Installation Guide

Allied Telesis, Inc.
www.alliedtelesis.com

Overview

The AT-CV101, AT-CV102, AT-CV102/1, and AT-CV102/2 media converters feature an 100Base-TX twisted pair port and an 100Base-FX fiber optic port. The twisted pair port has an RJ-45 connector and a maximum operating distance of 100 meters (328 feet). The fiber optic port has a dual ST or dual SC connector and a maximum operating distance of 2 kilometers (1.2 miles) to 40 kilometers (24.8 miles), depending on the model. Both ports feature half- or full-duplex mode operation. The line card is hot-swappable into and out of the chassis. These line cards can be installed in any of the Converteon™ Media Converter chassis, including the AT-CV5000, AT-CV1000 and AT-CV1200.

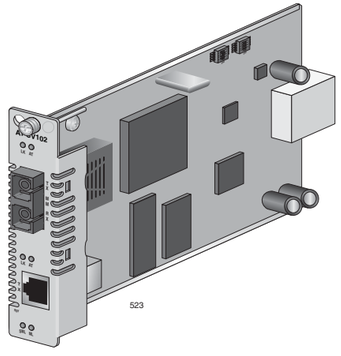

Figure 1. Sample of an AT-CV10x Series Line Card

613-000296 Rev C

Related Documents

This installation guide is an abbreviated version of the installation procedure. For details on the components, features, and functions of this product, refer to the following documents on our web site, www.alliedtelesis.com:

- ❑ *AT-CV5000 Media Converter Chassis Installation Guide PN 613-50580-00*
- ❑ *AT-CV1000 Media Converter Chassis Installation Guide PN 613-50582-00*
- ❑ *AT-CV1200 Media Converter Chassis Installation Guide PN 613-000331*
- ❑ *Converteon™ Media Converter Line Cards Reference Guide PN 613-50581-00*
- ❑ *AT-S70 Management Software User's Guide PN 613-50617-00*

Package Contents

Make sure the following items are included in the shipping package. If any item is missing or damaged, contact your Allied Telesis sales representative for assistance.

- ❑ One AT-CV10x Series Line Card
- ❑ This Installation Guide and a Warranty Card

AT-CV10x Series Line Card Components

The AT-CV10x Series line card, shown in Figure 2, features the following components:

- ❑ One 100Base-FX fiber optic port with a dual SC or dual ST connector
- ❑ One 100Base-TX twisted pair port with an RJ-45 connector
- ❑ Two DIP switches
- ❑ Seven port and system status LEDs

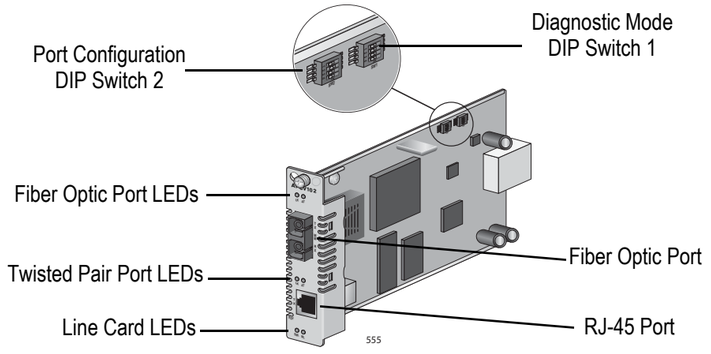

Figure 2. AT-CV10x Series Line Card Components

Note
Restriction of operation: While operating two AT-CV102 line cards back-to-back, where both cards are in SML mode, if the fiber connection between them is broken, remove the copper connection to one of the AT-CV102 cards before restoring the fiber link between them. Then wait at least 20 seconds before restoring the copper connection.

Fiber Optic and RJ-45 Ports

The AT-CV10x Series line card features one fiber optic port and one twisted pair port. The fiber optic port features a dual SC or a dual ST connector and has a fixed operating speed of 100 Mbps. The speed cannot be changed. The port has a maximum operating distance of 2 kilometers (1.2 miles) to 40 kilometers (24.8 miles), depending on the model and can use either 50/125 or 62.5/125 micron multi-mode fiber optic cable. The twisted pair port is 100Base-TX compliant and has a fixed speed of 100 Mbps. The port features an 8-pin RJ-45 connector with a maximum operating distance of 100 meters (328 ft). Category 5 or Enhanced Category 5 (5E), 100 ohm shielded or unshielded, twisted pair cabling is required.

Laser
Class 1 laser product.

Laser
Do not stare into the laser beam.

The following table lists the optical specifications.

Model	Type of Connector		Maximum Operating Distance [1]	
	100Base-FX	100Base-TX	100Base-FX	100Base-TX
AT-CV101	Dual ST	RJ-45	2 km (1.2 mi)	100 m (328 ft)
AT-CV102	Dual SC	RJ-45	2 km (1.2 mi)	100 m (328 ft)
AT-CV102/1	Dual SC	RJ-45	15 km (9.3 mi)	100 m (328 ft)
AT-CV102/2	Dual SC	RJ-45	40 km (24.8 mi)	100 m (328 ft)

1. Maximum distance may be less depending on the duplex mode of the end stations and the type of fiber optic cabling used with the port.

Status LEDs

The following table lists the fiber optic port and twisted pair port LEDs.

LED	Color	Description
LK	Green	Link established on the port.
	Blinking Green	While in Smart MissingLink mode, a valid connection is established on the port while a link on the other port is lost.
	OFF	No link established on the port.
AT	Blinking Green	TX/RX activity detected on the port.
	OFF	No activity detected on the port.

The following table lists the line card status LEDs.

LED	Color	Description
RDY	Green	The line card has passed diagnostics.
	OFF	The line card has not passed diagnostics.
SML	Green	The Smart MissingLink mode is enabled.
	OFF	The Smart MissingLink mode is disabled.
ML	Green	The MissingLink mode is enabled.
	OFF	The MissingLink mode is disabled.

Features

The AT-CV10x Series line cards are designed to support Link Test, MissingLink™ (ML), Smart MissingLink (SML), and Auto-MDI/MDIX features.

The DIP switches are used to set these features.

DIP Switches

The AT-CV10x Series line card features two DIP switches, Diagnostic Mode DIP Switch 1 (Table 1) and Port Configuration DIP Switch 2 (Table 2), as shown in Figure 2.

The tables below list the positions of these two DIP switches.

Table 1. Diagnostic Mode DIP Switch 1 Positions

Operating Mode	DIP 1	DIP 2	DIP 3	DIP 4
Link Test (default)	OFF	OFF	X	X
Smart MissingLink (SML)	OFF	**ON**	X	X
MissingLink™ (ML)	**ON**	OFF	X	X
Manufacturing Settings	OFF	OFF	OFF	OFF

“X” means the DIP switch position could be either ON or OFF.

Table 2. Port Configuration DIP Switch 2 Positions

Operating Mode	DIP 1	DIP 2	DIP 3	DIP 4
Auto MDI-X Enabled (default)	X	**ON**	X	X
Auto MDI-X Disabled	X	OFF	X	X
Manufacturing Settings	OFF	OFF	OFF	OFF

“X” means the DIP switch position could be either ON or OFF.

Installing an AT-CV10x Series Line Card

Note
The Converteon™ line cards can be installed in any of the line card slots located on the front panel of the Converteon™ chassis.

To install an AT-CV10x Series line card, perform the following procedure:

⚠ **Caution**
Before installing an AT-CV10x Series line card, refer to the appropriate *Converteon™ Series Chassis Installation Guide* for electrical safety and emission information.

⚠ **Caution**
Be sure to observe all standard electrostatic discharge (ESD) precautions, such as wearing an antistatic wrist strap, to avoid damaging the device. A line card can be damaged by static electricity.

1. Remove the Converteon™ line card from its shipping package and store the package in a safe place.

   You must use the original package if you need to return the unit to Allied Telesis.
2. Select an empty line card slot in the Converteon™ chassis for the card.
3. Remove the AT-CV5PNL1 blank slot cover from the selected slot.

   Keep the blank slot cover in a safe area in case you remove the line card. The blank slot cover is used to keep dust from getting into the chassis and maintains proper airflow, cooling, and ventilation throughout the chassis.
4. Locate the alignment guides in the chassis slot.
5. Align the back edge of the line card with the alignment guides located inside the slot. Avoid touching the line card components.
   – For the AT-CV5000, align with the top and bottom alignment guides.
   – For the AT-CV1000 and AT-CV1200, align with the left and right alignment guides.
6. Slide the line card until the front of the card is flushed with the front of the chassis.
7. Use a Phillips screwdriver to tighten the captive screw on the line card.
8. Repeat this procedure to install additional line cards.

Cabling an AT-CV10x Series Line Card

To connect the cables to an AT-CV10x Series line card, refer to the *Converteon™ Media Converter Line Cards Reference Guide* for instructions.

Technical Specifications

Physical, Environmental, and Electrical Rating

Dimensions (H x W x L)	.855" x 2.89" x 5.1" (2.2 cm x 7.3 cm x 13.0cm)
Operating Temperature	0° C to 40° C (32° F to 104° F)
Storage Temperature	-25° C to 70° C (-13° F to 158° F)

Operating Relative Humidity	5% to 90% RH (non-condensing)
Storage Relative Humidity	5% to 95% RH (non-condensing)
Operating Altitude Range	Up to 3,048 m (10,000 ft)
MTBF (Telcordia Standards)	
AT-CV101	1,020,00 hrs
AT-CV102	890,000 hrs
AT-CV102/1, AT-CV102/2	1,020,00 hrs
Power Consumption	
AT-CV101, AT-CV102	3.0 watts
AT-CV102/1	2.5 watts
AT-CV102/2	5.0 watts

Optical Specifications

Connector Type	Dual SC or Dual ST
Wavelength (nm)	1310 nm or 1510 nm
Fiber Type	Single-mode or Multi-mode
Operating Distance (km)	2 km (1.24 miles) to 40 km (24.8 miles)
Optical Output Power (dBm)	
AT-CV101, AT-CV102	-20 dBm to -14 dBm
AT-CV102/1	-15 dBm to -5 dBm
AT-CV102/2	-15 dBm to 0 dBm
Receiver Power Sensitivity (dBm)	
AT-CV101, AT-CV102	-31 dBm to -11 dBm
AT-CV102/1, AT-CV102/2	-34 dBm to -3 dBm

Electrical Safety and Emission Statement

Standards: This product meets the following standards when installed in compliant host equipment.

U.S. Federal Communications Commission

RADIATED ENERGY
Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note: Modifications or changes not expressly approved of by the manufacturer or the FCC, can void your right to operate this equipment.

Industry Canada

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Emission	FCC Class A, EN55022 Class A, VCCI Class A, C-TICK, CE
WARNING: ⚠	In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
Immunity	EN55024
Electrical Safety	UL60950-1 ($_{c}UL_{us}$), EN60950-1 (TUV), CAN/CSA C22.2 No. 60950-1

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